CLAIM AMENDMENTS

1. (Currently amended) An apparatus for locating an emitter of electromagnetic waves comprising:

a plurality of ~~receivers~~ airborne location system platforms, each of said ~~receivers~~ platforms having a receiver including means for detecting a time of arrival of said electromagnetic waves at said receiver, and

determining means for determining respective relative time differences of arrival of said electromagnetic waves between said receiver and other receivers of other platforms, ~~and for~~ estimating from the respective relative time differences a position of the emitter, ~~and~~ correcting ~~means for correcting~~ said detected times of arrival for path length discrepancies caused by ~~the atmosphere~~ atmospheric conditions to provide corrected times of arrival, ~~wherein~~ and outputting path length measurements from the emitter to each of said ~~receivers is mounted~~ platforms that are based on ~~a respective airborne platform~~ said corrected times of arrival.

2. (Currently amended) The apparatus according to claim 1, wherein the ~~correcting means corrects~~ detected times of arrival are corrected for discrepancies that are caused by atmospheric refraction.

3. (Currently amended) The apparatus according to claim 1, wherein said receiver is one of at least three pairs of ~~said~~ receivers. ~~are provided.~~

4. (Currently amended) The apparatus according to claim 3, wherein said ~~correcting~~ determining means is arranged to:

a) measure electromagnetic wave arrival time differences between pairs of said receivers,

b) ~~assuming straight-line paths,~~ obtain an estimate of emitter position,

c) for each receiver, using said estimate, obtain a ground range from said emitter to that receiver,

d) use said ground range, a receiver height, and an assumed refractive profile in a selected ray-tracing integral equation to predict actual path length,

e) obtain a path length difference between a predicted actual path length and ~~the~~ a straight-line path length of the estimated emitter position to form a correction to each of said electromagnetic wave arrival times, and

f) repeatedly obtain said estimate of emitter position, obtain said ground range, predict said actual path length, and obtain said path length difference until said path length difference converges to a certain value.

5. (Currently amended) The apparatus according to claim 1, wherein said ~~correcting~~ determining means is arranged to determine ~~said~~ a predicted actual path length **[[R]]** *R* between the emitter and at least one of said platforms from a ray tracing equation

$$R = \int_{h_0}^{h_1} \frac{n(h)}{\sqrt{1 - \left[\frac{n_0 \cos(\theta_0)}{n(h)\left[1 + \frac{h}{re}\right]}\right]^2}} .dh ,$$

where **[[n(h)]]** *n(h)* describes the atmospheric refractive profile as a function of height, **[[n_0]]** n_0 is the refractive index at the earth surface, θ_0 is the take-off angle of the ray at the emitter, **[[h_0]]** h_0 and **[[h_1]]** h_1 are the start and end heights of the path, and **[[re]]** *re* is the earth radius.

6. (Previously presented) The apparatus according to claim 5, including a Kalman filter for improving correction of said detected times.

7. (Previously presented) A method for locating an emitter of electromagnetic waves by way of the apparatus according to claim 1, comprising detecting the times of arrival of said electromagnetic waves, determining the respective relative time differences and estimating from the respective relative time differences the position of the emitter, and correcting said detected times of arrival for said path length discrepancies.

8-17. (Canceled)